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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,518	03/02/2007	Auturo Fregoso-Infante	FREGOSO 1	2463
1444 7590 03/03/2009 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			EXAMINER TISCHLER, FRANCES	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 03/03/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,518	<b>Applicant(s)</b> FREGOSO-INFANTE ET AL.	
	<b>Examiner</b> FRANCES TISCHLER	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

Claim objections not disclosed below are deemed withdrawn.

Claim 18 is objected to because of the following informalities: "alkal" should be changed for "alkali". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 15 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yazaki et al (US 6,580,005) in view of Mays (US 3,801,273).**

**Yazaki** discloses (abstract, column 2, lines 11 – 38, column 4, lines 25 – 47, claims 1 - 3) a process for recycling PET waste from beverage bottles and the like, comprising:

- (a) a decomposition reaction with an alcohol and a base metal, the base metal being equi-molar or excess-molar relative to the PET, to form the salt of terephthalic acid and ethylene glycol
- (b) a solid-liquid separation where the salt of the terephthalic acid is separated from the alcohol and water is added; the salt of terephthalic acid is dissolved in water while insoluble impurities are removed
- (c) a crystallization step where a strong acid is added the solution of the salt of terephthalic acid to crystallize the latter
- (d) a separation of the terephthalic acid crystals followed by washing them and drying them
- (e) the alcohol is distilled and returned to step (a) (column 2, lines 63 – end, column 3, lines 1 – 9, column 17, lines 34 - 36).

The temperature of the decomposition reaction ranges from 130 to 180°C, reading on Applicant's boiling point of alcohols such as ethylene glycol, which is 197.3°C (column 5, lines 41 – 58). Water is added in step (b) at 80°C (column 12, lines 50 – 65), reading on applicant's below 90 °C. The reaction is carried out at atmospheric pressures (column 17, lines 18 – 57). Yazaki discloses (column 13, lines 29 - 35) using sulfuric acid until the pH reaches about 2 to 4 at which point terephthalic acid is precipitated out as crystals. Other acids such as hydrochloric acid, nitric acid, etc. can

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also be used. Yazaki discloses (abstract, column 2, lines 12 – 38, column 14, lines 37 – 64, claims 1 – 3) vacuum filtering, washing and purifying the terephthalic acid crystals.

**Mays** discloses (abstract, column 2, lines 34 – 55, column 4, lines 23 – 33, example 1) a method of recovering waste cellulosic fibers from polyesters, such as PET, by heating it to 212 – 275 °C, treating it with aqueous alkali metal hydroxide, such as sodium hydroxide or potassium hydroxide, and an alcohol in order to decompose the waste polyester. The alcohol can be aliphatic monohydroxy alcohols such as methyl, ethyl, propyl, butyl, etc., or dihydroxy alcohols such as ethylene glycol, diethylene glycol, propylene glycol, etc.

Yazaki discloses (column 11, lines 55 – 65) that approximately 80% of the base metal should be sodium carbonate with 20% or less of alkali metal hydroxide, such as sodium hydroxide or potassium hydroxide, because containing the amount of NaOH or KOH increases the efficiency of the decomposition reaction and, further, sodium carbonate is cheaper than sodium hydroxide. Yazaki fails to teach the use exclusively of sodium hydroxide or potassium hydroxide. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have varied the amount of sodium hydroxide and sodium carbonate as necessary through routine optimization to obtain the desired results of efficiency and cost. Additionally, it would have been obvious to one of ordinary skill in the art to have performed Yazaki's process using

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100% sodium hydroxide or potassium hydroxide as taught by Mays, since Mays uses said metal hydroxides with alcohol to break down the polyester.

Yazaki discloses (column 10, lines 64 – end) the use of ethylene glycol, propylene glycol, and the like as the alcohols used in the process, but fails to specifically disclose water insoluble alcohols and monohydric alcohols with 4 to 8 carbon atoms. It would have been obvious to one of ordinary skill in the art to have substituted Yazaki's diols with Mays' monoalcohols since Mays discloses that they can be interchangeable for the same purpose of decomposing PET with the further use of an alkali hydroxide. It is noted that applicant admits (page 6, lines 18 – 25) that mono or polyhydric alcohols can be used, and especially preferred is a methanol/ethanol mixture.

### ***Response to Arguments***

Applicant's arguments with respect to claims 15 - 22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANCES TISCHLER whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Irina S. Zemel/  
Primary Examiner, Art Unit 1796

Frances Tischler  
Examiner  
Art Unit 1796

/FT/